The MINING CONGRESS JOURNAL

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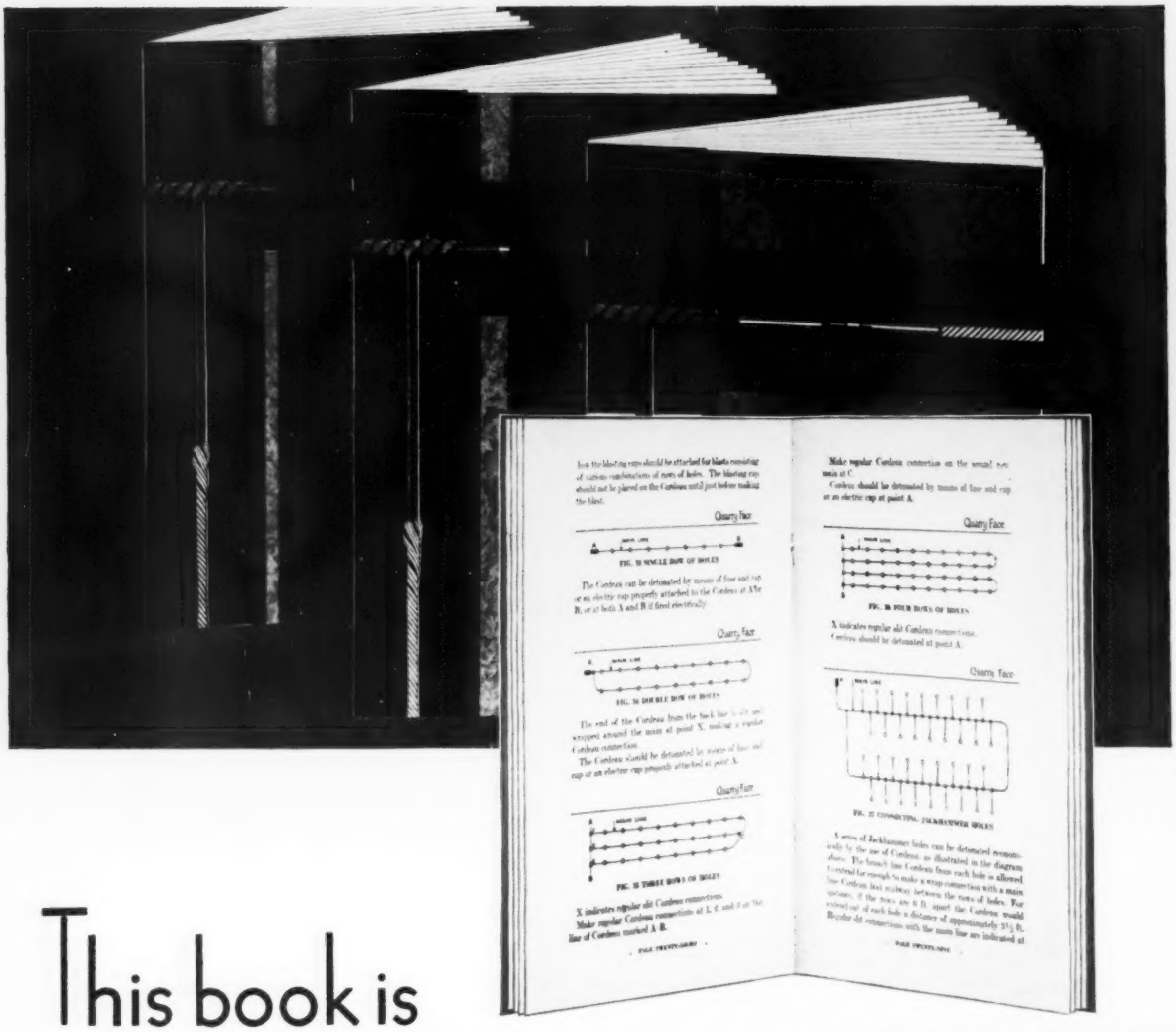

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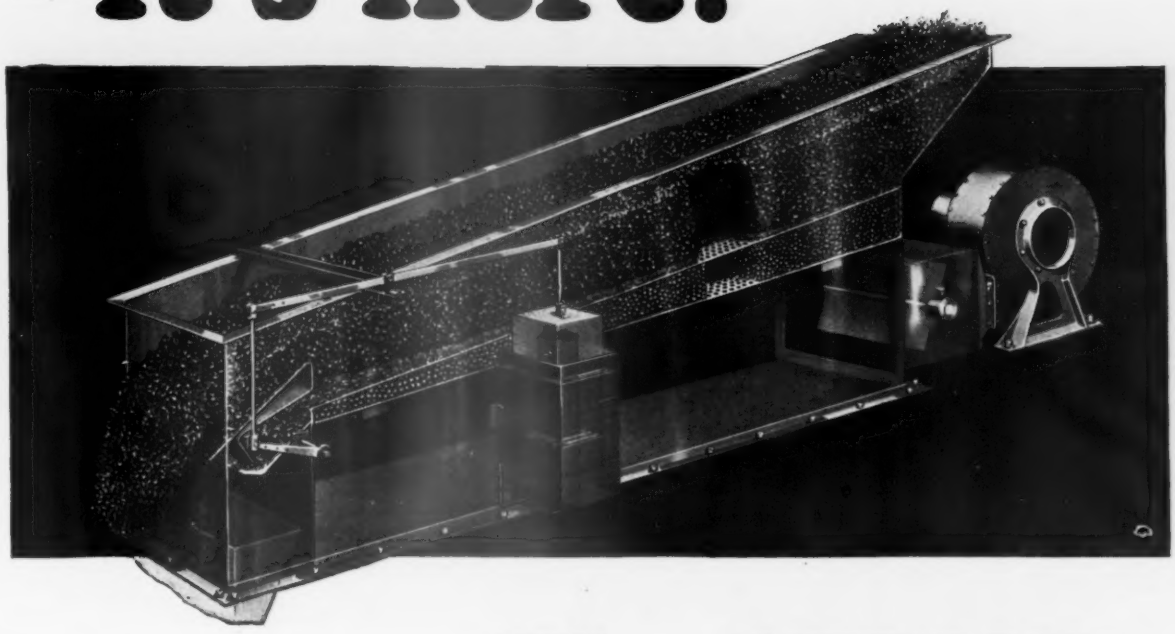

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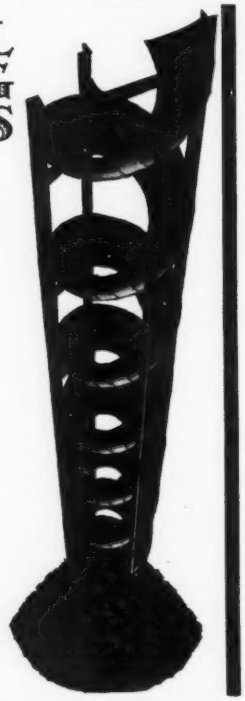

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Things that Cause a Depression

THE DISTINGUISHING FEATURE of the world-wide business depression lies in the fact that everywhere price levels have fallen. This price decline is probably the greatest in all history because of the fact that the 1929 price levels were higher than ever before and the current prices are approximating the world's lowest price levels. It has been found that all price levels in the long run are measured by the amount of money available for the purchase thereof. The wants of the people are almost without limit. The needs of the people are practically uniform. Where the purchase price is available needs are always gratified, and on the whole the people's wants are usually gratified to the extent that money is available for the purchase of luxuries.

The difference between good and bad times is more generally controlled by the banks, who have it in their power to so restrict credit as to precipitate panic. The bank restriction of credit is usually followed by hoarding of the real money, not only by individuals but by the banks whose supreme obligation is to protect their depositors without reference to business conditions. Primarily the present business depression was preceded and caused by an unprecedented abuse of credit. Primarily this was caused by an overdevelopment in production of luxuries which were forced upon the public by high-powered salesmanship and paid for by a mortgage upon the next year's earnings.

It is frequently stated that the present depression would be cured if the public could be induced to go in debt again for millions of dollars for luxuries which can easily be dispensed with. The process of installment buying of luxuries is perhaps the greatest curse to business prosperity.

Another cause which bulks large in the picture of business depression causes was perpetrated upon this country by some of its leading banking institutions. Much of the surplus cash used in loans to foreign governments and (what is in effect the same thing) in the purchase of foreign bonds, all of which are either very greatly depreciated in value or entirely worthless.

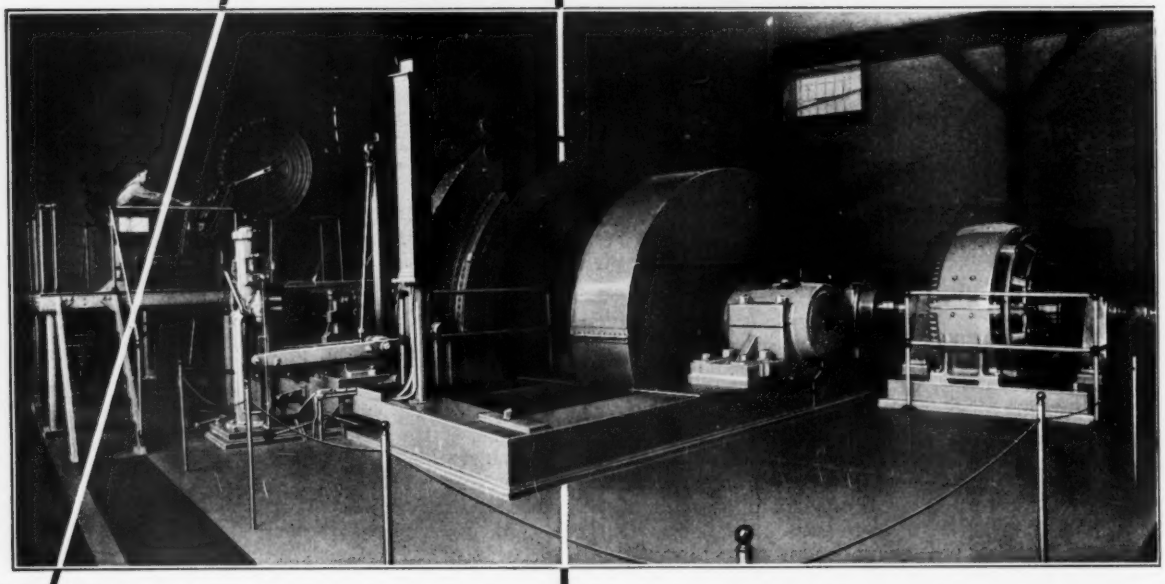
The radical contingent of our population insists that capitalism has broken down. This is not the fact. Capitalism i. e. (the right of private ownership in property created directly through personal effort or purchase from others with money developed by personal effort) is more dear to the well-thinking, prosperous people of the world than ever before. The control of accumulated wealth has been badly managed, abused, and even robbed by those in whom we have heretofore placed confidence and whose further power for self-aggrandizement should be drastically limited.

We are on the gold standard; we may control currency. The Federal Reserve Bank for several weeks has been purchasing bonds in the hope that the money thus released to the holders of these bonds would get back into business uses and help to develop an upward trend of industrial activity. These activities have met with almost complete public approval. When the same Federal Reserve Bank undertook to prevent the inflation of 1929 by drawing in its currency a howl of protest came from big business centers against the attempt of the Federal Reserve Bank to control business operations. To meet that situation and to require of the Federal Reserve Bank a consistent attitude with relation to business the Goldsborough Bill was proposed, under the provisions of which the Federal Reserve Bank is to feed out its cash reserve into the business channels of the nation when the price level of commodities is so receded as to make production unprofitable and to draw in again that currency whenever price levels shall tend to raise above the level of reasonable profits.

The Federal Reserve Bank is now doing exactly what the Goldsborough Bill undertakes to direct, and yet those bankers who betrayed the country by draining its cash and substituting worthless foreign bonds condemn the bill as being "a sinister form of inflation."

The difference between present price levels and the average commodity price level from 1921 to 1929 may be too great a stretch to be covered quickly and the effort to do so might be dangerous, but we can see nothing in the principles involved in this bill but a control of our managed currency by the law of supply and demand rather than by the humor and whim of the Federal Reserve Bank officials or by the bluff and bluster of big business which desires to so control the money of the nation as to permit enormous profits to them through the wrecking of the business machine which makes for the prosperity of the nation.

HOISTS



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Maximum rope speed . . .	1500 ft. per min.
Hoist motor	1000 h.p.
Motor-Generator Flywheel Set	1000 kw.

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The
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SEPTEMBER
1 9 3 2
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Editorials

Shorter and Shorter

THE last fifty years has witnessed phenomenal growth of industrial United States. We have attained our supremacy because of many things . . . unrestricted development of our natural resources . . . inventive genius . . . intelligent leadership . . . but above all through our ability to produce and distribute our products economically, cheaply and in volume. The word "cheaply" stands out because nowhere on earth has a people achieved such a high standard of living at so small a cost.

But if this growth has come at a cost of thousands of jobs; if this very efficiency has brought us face to face with a great crisis, what has it profited us? What are we, as a country, going to do with our great army-of-the-unemployed? President Hoover has called another conference of industrial leaders to meet in Washington to discuss just how we are going to re-employ these unemployed.

The questions involved are not casual. They are not superficial. They must be answered, and answered in a measure that will insure permanent results. Industry is fully aware of this necessity. The individual worker is acutely aware largely of his own suffering and is seeking some kind of a remedy. Thus we have new organizations—"The Khaki Shirts," for instance—reaffirming loyalty to the United States and its Constitution but pledging endorsement of only those officials who have the good of the masses at heart, who pledge a new deal in political and industrial life.

Is there anything in sight that gives promise that present performance will not be repeated next year or ten years hence? Between six and eight millions must be cared for this winter . . . millions of human beings with wants and needs, hopes and ambitions, who are, through no fault of their own, public charges. We may dismiss the small army of discontents when considering the problem. Always we shall have dissatisfaction. Our problem is to see that that dissatisfaction is unjustified, and in the minority.

It is estimated that in the ten-year period from 1920 to 1930 unemployment was increased by 1,000,000 men through the use of machinery—the substitution of mechanical devices for man power. Cost reduction almost always means machine production, and it has been because of this fact that thousands of new industries have been created and many men employed at higher wages. Because this rising tide of invention temporarily throws men out of work is no reason to discard it. It is stupid to believe that the problem is less machines and more men.

Both employer and employe have been the beneficiary in this age of machine progress. The employer has had his costs reduced; the employe has enjoyed a shorter working day and week; cheap living costs, with an increased standard of living, which has become the goal of the working man throughout the world.

Many ideas are being advanced. One of them the six-hour day and the five-day week. Many industries would welcome right now the chance to work five days, of six hours each. There are 48,000,000 persons gainfully employed in our industries in normal times. Thirty millions of these are what we term "wage-earners," so-called day workers. The adoption of the principle, universally, it is claimed, would be a long step toward re-employing our unemployed, and could be accomplished with little cost to industry, to employed workers, and with great enhancement of our national purchasing power and much bolstering of our national pride and morals.

Many industrial leaders are unalterably opposed to the proposal of a shorter working week. They maintain that the consequent reduction in wages would lower standards of living, and would not accomplish the thing we are striving for. Similar objection was raised when industry went from the 12 to the 8 hour day. Shorter working hours, by themselves, will not automatically bring back prosperity. No one claims that. But their adoption would bring about a wider distribution of employment and wages and should provide work for a greater number of men. There seems to be one major point, at least, for industry to consider: Whether shorter hours, with less wages, are a desirable substitute for our present bread lines.

The Cost of Government

FOR many months now the country has been teeming with statistics showing the cost of government. Editorial writers, generally, have used the truly astounding figures in bulk, and made a splendid case against government as is. When such intelligent analysts as the Industrial Conference Board, the Chamber of Commerce, etc., got really busy with their pencils we find that the four billion so indiscriminately heralded does not represent colossal extravagance in Washington alone. We find among other interesting things that the chief reasons for higher cost of government since 1915, are (1) 72 percent is expended on the war debt, the war veterans and the Army and Navy, and (2) over one-half is spent (from state and local taxes) on the public construction of highways and buildings and on education. The federal government employs regularly 620,000 people, at an average salary of $141.00 per month. About 2,000,000 are employed by states, counties and cities. In the present period, 1932-1933, $15,000,000,000 has been appropriated, and of this amount 30 percent is for federal expenditures, and 70 percent for costs of state and local governments.

The National Association of Manufacturers has recently organized a nation-wide committee to study the cost of government with a view to securing reductions, particularly in the case of veterans, and in state expense. These two items constitute the real extravagance. There is no question but that taxes must come down. We have started at the wrong end of the prob-

lem, in reducing the salaries of the already poorly paid government clerk, but the main point is that we are now really seriously considering our tax problems. When those who pay the taxes earnestly seek their reduction, the end is already in sight.

Cartels and Coal

CARTELIZATION or chaos, which is it that lies in the future for coal mining and marketing? The coal operators and miners and last, but by no means least, the coal-consuming public await the outcome of Appalachians, Inc., on its course through the stormy seas of legal procedure, through the "twilight zone" created by the anti-trust laws "wherein honest men fear to enter." If it succeeds the problem will be simplified; if it fails—what?

There is another group to be thought of and reckoned with when we speak of the public and that is the investing public. Capital must be forthcoming in the orderly conduct of any business enterprise and such capital—the money with which to develop and improve—will not be forthcoming from an estranged public which has lost confidence in those charged with the management of coal mining and marketing. If Appalachians, Incorporated, becomes a success in legality and fact, it is earnestly to be hoped that the problem of coal will be solved and that we will emerge from chaos to the well charted and serene waters of sensible and proper business procedure. If not—what—?

A legislative drive is inexorably proceeding throughout the land to change the present condition. The atmosphere of the movement follows the trend that: "come what may any change could not be for the worse."

What next? The familiar cry of "there ought to be a law!" If legislation comes every effort should be exerted to make it sane. Some effort should be made at salvage. Would cartelization—the creation of cartels through assignment of tonnage allocations with resultant mergers of proper interests be preferred to chaos or unbridled federal commission dictation?

Where Responsibility Rests

IN OUR mail recently we found the following: "When an employer of labor, organized or unorganized, through loss of business and decreased sale price of his products, becomes less and less able to pay the prevailing wage scale, the responsibility falls upon his employes to make the decision whether it were better for their own welfare for them to accept a reduction in wages in accord with the prevailing economic conditions and general trend, or to see their employer go out of business and they take chances on getting similar work elsewhere, other work somewhere or no work anywhere."

The striking Illinois miners could well and profitably read that quotation. Wages have come down. The cost of living has come down. And they will have to remain down until such time as industry—capital—has had an opportunity to recoup its losses. What industry needs is cooperation, not strikes, and if the miners in Ohio, in Illinois, in Indiana, in Wyoming and elsewhere wish to see their source of livelihood survive, now is the time for them to help.

Capitalism's Breakdown

FROM sources whose origin is easily discernable we repeatedly hear these days that the capitalistic system under which we operate has hopelessly broken down. A recent editorial in the Wall Street Journal bears evidence that this notion is not a new one:

> "Nor have the demoralizing consequences of the funding system on the more favored classes been less decided. It has made debt a national habit; it has made credit the ruling power, not the exceptional auxiliary, of all transactions; it has introduced a loose, inexact, haphazard and dishonest spirit in the conduct of both public and private life; a spirit dazzling and yet dastardly; reckless of consequences and yet shrinking from responsibility. And in the end, it has so over-stimulated the energies of the population to maintain the material engagements of the State, and of society at large, that the moral condition of the people has been entirely lost sight of.
>
> "A mortgaged aristocracy, a gambling foreign commerce, a home trade founded on a morbid competition, and a degraded people; these are great evils, but ought perhaps cheerfully to be encountered for the greater blessings of civil and religious liberty."

These ideas were advanced in 1844 by no less a personage than Disraeli. Apparently capital's efficiency as a leader was challenged almost a hundred years ago.

Unemployment Insurance and Pensions

WE are in hearty sympathy with those industries that have attempted to take care of the men and women who have devoted their lives in the building up of a great company. We have watched with great interest the experiments of "unemployment insurance" and the "pension system." Labor, itself, has been active in advocating federal employment insurance and old-age pensions. All have realized that something must be done about emergencies such as the present and to prevent its repetition. Many bills have been introduced in state legislatures and in the National Congress looking to the abolishment of these evils. Some companies have worked out satisfactory plans. Notably among these are General Electric Company and Standard Oil Co.

It is then with considerable interest that we have noted the announcement of the Vacuum Oil Company that it has put its retirement pension and death and accident benefit reserves under the management of the Metropolitan Life Insurance Company. They have found their annual appropriations inadequate to insure the permanent accomplishment of the purposes desired. It is a well known fact that it is almost impossible to set up a known reserve to meet an unknown liability.

Many other corporations are following their method. According to reliable estimates, more than $550,000,000 are now carried by insurance organizations for security against old age. A goodly proportion of this sum, of course, is contributed by the employe, but it shows definitely that industry is accepting its responsibility and that it is making a real effort to cope with the necessity of looking after its employes when they are no longer able to look after themselves.

The Cost of Government

by **Robert L. Lund***

THE FACTS about Cost of Government show that Uncle Sam, the genial gentleman in high hat and striped trousers is deserving of great sympathy. He has a most extravagant family of nieces and nephews whose demands for services, conveniences and luxuries are endless. As evidence may be cited bills introduced during just the first few months of the last session of Congress. These bills called for the spending of 33 billion dollars, a sum equal to more than half of the nation's annual income.

The great majority of these measures were framed, not by members of Congress but by individuals or groups. Many of these bills are altruistic. Some are selfish and are supported by highly organized minorities. There is great danger in these selfish efforts of special interests to get Uncle Sam to pay for things they wish done, and whatever may be said of others, it may be frankly admitted that industry is not entirely innocent.

While the Congress appropriated only about one-seventh of the 33 billion and thus is deserving of some commendation, it *is true*, as this statement will make clear, that the 4 billion 6 hundred million dollars which was appropriated is still much more than the country can afford to spend for Federal Government. As citizens we are largely responsible, particularly for failure to prevent legislation by minority groups through political manipulation. It is deplorable but true that often in legislative halls the statement is made: "This bill is wrong but I must vote for it because it would be political suicide to do otherwise." We get the picture from the somewhat humorous instance of the Senator called home by a radical minority movement in his state. In parting a fellow legislator remarked: "You are going to fight these radicals, I take it Senator?" "I don't know yet," was the answer, "I'll count their votes first, if they've got enough I'll join them."

The 4 billion 6 hundred million dollars mentioned is for cost of Federal Government only. To this must be added the cost of state and local government. Here we have a problem double the size, for these expenditures total 10 billion dollars a year. A problem tremendously more difficult too because the taxes are assessed by over 500,000 different and distinct units of government.

A still more serious aspect is, that while Federal costs have increased 14 percent in the past 10 years, the state and local expenditures have increased 76 percent. Here is an issue to test the qualities of our citizenship. A challenge to all who believe in our form of government because the fiscal structure of the United States will certainly collapse if this trend continues.

Let us see what these figures mean. Fifteen billion dollars is $134 each year for every man, woman, and child in the United States. In round figures $500 for each family. In 1890 this cost was only $50—one-tenth as much. Is our government ten times better than in 1890? The answer, of course, is "no." Can we afford to spend ten times as much as in 1890? It is certain that we can not.

Our total national income is now estimated at a little less than 60 billion dollars annually. We are thus spending for government more than one-fourth of our national income. Every man and woman producer in the country is working one day in four, three months in each year to pay for government.

This is an unbearable burden. Many of our soundest economists believe that it is the cause most to be blamed, for the present world depression. This conclusion is borne out by the fact that all nations are sinning as we are, a few even more. In Australia one-half of the national income goes for government and we know Australia as a nation is bankrupt. Certainly we can not expect normal conditions to return until this amazing and universal governmental extravagance is corrected.

The National Association of Manufacturers which is sponsoring this statement has always opposed those measures which seemed to call for unwise government expenditures. The same may be said, we think, of agriculture and labor and other interests. In spite of this resistance to government overspending, however, we had last year a federal deficit of over a billion dollars.

In the light of what has happened since the depression began particularly of these budget deficits, our Association several months ago addressed itself anew to the problem of government economy. It was clear that before any intelligent action could be taken there must be had first an analysis of all government expenditures and with this in view we have gotten under way an exhaustive study of federal operations. In this study our staff is having the aid of the National Industrial Conference Board and also a firm of nationally known accountants, who have volunteered their services. We are cooperating also with the National Economy League which is organizing a nation-wide campaign on governmental economy headed by Admiral Byrd and Mr. Archibald Roosevelt and sponsored by a group of men of national reputation.

The purpose of the investigation we have undertaken is to find where savings can and should be made. It will cover all federal operations and a similar study of state and local expenditures is being set up by state industrial organizations which form the National Industrial Council of our Association.

Let us take a few moments to see what facts these studies are bringing to light.

The largest single item of Federal Government cost that is subject to modification is the Veterans Bureau expenditure. Nine hundred and twenty-eight million dollars for the past year. This is one-fourth of the budget and it is paid to less than 1 percent of the people.

An amazing item in this expense is that for veterans of the Spanish-American War. This war lasted 114 days, 300,000 men served in it, 397 were killed in action and a total of 6,400 died from all causes.

In 1915, 16 years after the war, there were 29,000 pensioners receiving not quite 4 million dollars. In 1920 the number of pensioners and the amount paid them were both somewhat less than in 1915, but in 1932, and please mark these figures, there were 235,000 pensioners receiving 116 million dollars. Eight times as many pensioners and 30 times as much money paid to them.

The expenditure for the World War veterans is on the same scale. An amazing ingenuity has been brought to bear in devising forms of compensation. Instead of the old plan of one kind of pension payment, we now have many, each piling up tremendous costs. Let us take them in order. We have first:

Disability compensation—206 million dollars per year. Three hundred and twenty-four thousand pensioners are in

* President, National Association of Manufacturers.

this group although there were only 220,000 wounded in the war and 158,000 of these returned to service. Next we have the—

Disability allowance, 104 million dollars per year. This allowance is paid to veterans suffering any kind of disability without regard to whether it resulted from war service. There were 811,000 applications for this allowance within a few months after passage of the law. Then we have the—

Hospitalization and medical treatment —55 million dollars. Seventy-six percent of the cases receiving benefits under this act suffered no disabilities from the war service. Again there is the—

Harris & Ewing

Pennsylvania Avenue, Washington, showing partial changes to be effected by new government building program

Officers' retirement pay—11 million dollars. Only half of those receiving this pay suffered any injury in the service.

There is time only to mention military and naval insurance and the tremendous cost of hospital plants. The administration of the bureau costs 60 million dollars annually. There are 40,000 employes and 1,400,000 checks are sent out each month.

War veterans as a whole are not to be charged with this miserable miscarriage of national gratitude for war service. Many Legionnaires have opposed it, in Congress and out. It has come out of political demagogy of the worst stripe. There will be no disagreement that those suffering injury from war service should be compensated. If the veterans' compensation were so administered, and only those who suffered disability from service received benefits, the Veterans Bureau expenditure would be reduced by 452 million dollars.

Another astonishing fact is that if our veterans' compensation were on the same basis as in England, the cost would be reduced two-thirds—by more than 600 million dollars.

Congressman Johnson, of Washington, a loyal friend of deserving veterans, tells of cases where estates valued as high as $20,000 are being built up from these government gratuities for admittedly incompetent men with no dependents whose incapacity did not begin until six years or more after the war.

The Veterans Bureau is only one of the thousands of extravagancies in Federal Government expenditures. The other budget items may be conveniently grouped as follows:

Public debt, 1,136 millions.
Permanent appropriations, 149 millions.
Military, 713 millions.
Other regular appropriations, 1,149 millions.
Emergency relief, 322 millions.

Most of these items of government cost can be reduced and the studies under way are planned to show where savings can be made.

The National Association of Manufacturers has particular interest in the effect of this unwise government expenditure on industry. Manufacturers are burdened with taxes that increase the cost of their products and the prices consumers must pay — that destroy profits, making it difficult to interest investors or to borrow from banks, thus adding to the forces creating unemployment. Taxes paid by railroads are 13 times greater than in 1890 and equal one-third of net earnings. Taxes paid by the utility companies have doubled since 1913 and are now 21 percent of earnings, while residential rates have been reduced 33 percent. All industry is similarly affected.

In conclusion it might be well to warn against uninformed and partisan criticism of government expenditures, of which there has been much. The Department of Commerce is an instance. In this ill-considered crusading it has been singled out by some individuals, journals and chambers of commerce for such criticism. One executive who publicly questioned the worth of the department's services was shown that in one day his own corporation made 132 requests, and on another 80 requests for information about trade prospects in 32 foreign countries; valuable services about which he knew nothing. Other criticism is of the same sort—neither discriminating nor constructive. It is a fact that the total expenditures of this department are ony slightly over 1 percent of the total Federal budget and that three-fourths of this is spent on services which could not be dispensed with—the Census Bureau, Patent Office, Light Houses, Navigation. It is also of interest to know that one of its bureaus, the Patent Office, is self-sustaining. An excellent example for service bureau operation.

There must be an intelligent, fair, open-minded approach to this problem of government economy. It is certain that many present governmental activities should be stopped because not productive. It is certain that there is overlapping that can be corrected. It is certain that in many places more economical operation is possible and finally it is more than probable that some activities, valuable in themselves, must be discontinued because there will be no money for them after taking care of the more necessary public service.

Sound government limits its activities to functions it can perform better than the private citizen. This principle was set up by the wise Lincoln. We have gone far beyond this field. Our government is competing with its citizens in hundreds of businesses—from building ships to operating laundries—without knowledge of results because there is no proper accounting of costs. There is large opportunity for savings here and it is encouraging that a congressional committee is investigating this bureaucratic evil.

And while reducing expenditures for services already set up it must not be forgotten that continued vigilance is necessary to prevent appropriations for new activities. There are literally thousands of such proposals before Congress, ardently supported, and they must be kept off the statute books if the national budget is to be balanced and kept in balance.

The well-being of every citizen and every business and other institution is at stake in this issue of government cost. For self-protection we must all unite in fighting it. There is opportunity for all to do so in the national and local organizations that have been and will be set up to combat the evil. May I in closing urge upon every listener the vital necessity of taking a full part in this highly patriotic movement.

Portable Telephone and Reel for Mine Rescue and Recovery Operations*

by **R. I. C. Manning**†

PORTABLE telephones and reels have proved to be helpful and often a necessary part of the equipment used in rescue and recovery operations in mines following disasters. Such accessories frequently prove useful in mining properties for special work other than that at disasters, as for instance in establishing temporary communication prior to the installation of a permanent telephone or other system of communication.

Portable telephones have been used to great advantage in many operations, both inside and outside of mines at disasters, and it has frequently been necessary to string temporary wires at great loss of time and efficiency. These portable telephone sets have also been used for tapping in on established lines.

At Ray, Ariz., the Nevada Consolidated Copper Company has a wooden reel mounted on a steel frame with pipe handles extending from either side, to hold the cable for the portable telephone equipment. On one side of this reel commutator rings are fastened to enable the telephone to be attached and used while the cable is being unreeled. This arrangement also permits the use of the telephones and movement of the operators while the cable is being unreeled without detaching either instrument. (See photograph.)

One thousand feet of 2-conductor 16 Tirex Cord is on the reel at present. Two telephones of the Western Electric portable type, enclosed in leather carrying cases, are connected to this cable and reel.

Two terminals are fastened to a board on one side of the frame for the stationary connection. Short pieces of cable are supplied for connecting the telephone to these terminals. At the movable end of the cable small clips have been permanently fastened to each of the wires for connecting to the other telephone.

There is ample cord connecting both the transmitter and the receiver to the telephone box to permit the free movement of the operators.

The reel described was constructed in March, 1926. The desirability of having such equipment was forcibly brought out by a fire in Mine 3 in November, 1925, but it has never been used under actual disaster conditions. It has, however, been tried and found to be exceptionally efficient in many maneuvers by rescue crews practicing under conditions closely approximating operations that might follow mine disasters. This reel can be used as a life-line as well as to enable speaking communication to be maintained at all times between a fresh-air base and a rescue team.

Portable Telephone and Reel in Operation

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†Associate mining engineer, U. S. Bureau of Mines Safety Station, Phoenix, Ariz.

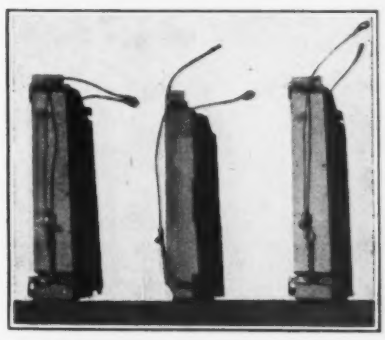
A Safety Timber Sling*

by **R. I. C. Manning**†

VARIOUS TYPES of slings have been devised for hoisting timber up raises, both for stoping and development work in metal mines. Many of them are extremely hazardous to use because their efficacy largely depends on the ability of the workman to tie the timber safely. As a result of hurried and careless manipulation of the average sling, many serious accidents have occurred.

At the Morenci property of the Phelps Dodge Corporation, Arizona, raises are timbered throughout with standard-sized cribbing and much of this timber must be handled in the raises. To facilitate its safe and efficient handling, a novel sling has been designed and is in use.

The sling consists of two iron straps shaped to fit over the framed ends of the cribbing and made sufficiently small that they will not slide beyond. A chain has been fastened permanently to one of these straps, and to this chain is attached a cable which passes through a slot in the strap at the upper end of the cribbing. At each end of the cable is a loop reinforced by a thimble. The ends of the cable are securely guarded to prevent injury. (See illustration.)



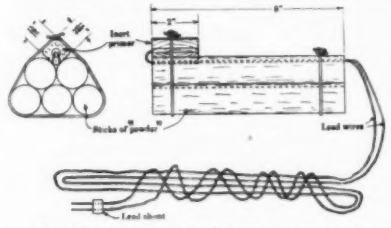
This sling can be made for various sizes of timber, and unquestionably its use will do much to prevent accidents in the handling of timber in raises, whether the timber is let down from above or pulled up from below.

Electrical Blasting With Bombs and Inert Primers*

by **R. I. C. Manning**†

AT THE MORENCI BRANCH of the Phelps Dodge Corporation, Morenci, Ariz., all blasting is done electrically and all detonators issued are firmly encased in wooden plugs. (A description of electrical blasting practice at Morenci was published by *The Explosives Engineer* for June, 1931.)

In blasting hung-up chutes and raises, bombs are used with inert primers, made by inserting an instantaneous blasting detonator of No. 6 strength in a plug. The detonator is held in place in the plug with glue, in which it is dipped and then allowed to set for 24 hours before being used. The wooden plug is made 2 in. long from a 15/16-in. square piece of wood which is trimmed to quarter-octagon shape. The plug is drilled with a 23/64-in. wood bit which is slightly tapered, thus preventing the cap from passing entirely through the plug. To make up a bomb the sticks of explosive are placed together, the primer is laid on the top at one end with the live end of the primer pointing down the bomb, and the wires are passed under the plug; this end is then tightly tied with a string, the primer being tied in with the sticks of explosive. The other end of the bomb is then tightly tied with another piece of string or binder twine, the leg wires of the blasting cap passing out of the bomb under the second string. All leg wires are "shorted" and the "short" is not removed until the bomb is in place and about to be connected to lead wires immediately before blasting. All bombs are made in this manner, except when only a half stick of explosive is needed; in this case an ordinary stick of explosive is cut in two, and one half is placed in an empty paper cartridge with the exposed explosive pointing upward. A wooden primer is then placed in this cartridge with the detonating end pointing toward the bare explosive and the wires pointing straight up. The end of the cartridge is then tied around the leg wires of the detonator by means of a string. (See attached sketch.)



Details of bomb with inert primer as described

Bombs are made in sizes varying from ½ stick to 7 sticks of explosive, depending on the use for which they are intended. All bombs are made in a centrally located magazine underground by two men who have a contract for this work. This method is far more efficient than having miners make their own bombs either in a magazine or at the place of work; much time is saved and the bombs are far more carefully and substantially made. There is also an appreciable safety factor in the making of bombs by two men who do nothing else. After they have been made the bombs are stored in separate magazines on each level in the mine and issued to the miners by the magazine keeper upon presentation of a written order by the level boss. The order specifies the size and number of bombs to be issued to the miners.

This method of making bombs with electrical detonation has been used exclusively in the Morenci mines since July 1, 1930. The bombs have been fired both by portable blasting machines and by the regular blasting circuit, which is 250 volts direct current.

In chute blasting, bombs are attached to 1 by 2 in. blasting sticks for placing in the chutes or raises.

In nearly two years many thousands of these bombs have been used, and there has never been a single instance of a misfire or of burning of explosives. There has been some criticism regarding the placement of the inert primer in bombs containing more than a half stick of explosive where the primer lies on top of and parallel to the sticks of explosive; this criticism was based on the theory that the maximum force of the detonator was not directed toward the explosive charge. Officials and miners at Morenci have no very definite way of judging the efficacy of bombs; however, they have proved even more efficient than any other type used in the mine, when everything is taken into consideration, and also a definite safety factor appears to be connected with the use of the wooden primers. One of the safety features of this system is the fact that all bombs are made by two trained men in a safe place. There is no doubt that a large amount of explosives is saved by the use of bombs of standard size.

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†Associate mining engineer, U. S. Bureau of Mines Safety Office, Phoenix, Ariz.

THE NEW METAL SAFETY STANDARD

EVERY METAL MINING MAN should have a copy of the new "Safety Rules for Installing and Using Electrical Equipment in Metal Mines," recently approved as American Recommended Practice by the American Standards Association • This Standard, developed and presented to the A. S. A. through the procedure of the National Standardization Division of the American Mining Congress, incorporates the best thought of the mining world on this important subject • The price per copy is 25c • We suggest that you place your order promptly.

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439 MUNSEY BUILDING WASHINGTON, D. C.

PROFITS —— Through Reduction of Accidents

by **John T. Ryan***

COAL MINING in the past has been one of the most hazardous of our major industries. Everything surrounding this occupation takes on a serious demeanor when it is under consideration. When a commodity wields such a tremendous national power it is tuned to respond to every whim of business, big or small. This state of sensitiveness registers many difficulties and problems. Among the chief concerns of the mine owner one might list the competitive market and competitive fuels which control production costs and selling price. The production in total tonnage is largely regulated by market demands. These same demands control the price to the consumer. But the cost of production concerns only the management. The first duty of every official, then, would be to reduce production costs and increase profits.

When every item of expense concerned with production is listed, one of the chief items is that classed as fatal and nonfatal accidents. All coal-mine accidents are costly, not alone from the standpoint of loss of life and human suffering but financially as well.

Let us consider the cost, per ton of coal mined, that is allotted to accidents.

The direct cost of accidents to the mining industry represents only actual payments to injured workers or their dependents plus medical and hospital expense which the industry pays. This direct cost is estimated by insurance actuaries, who have given the question serious study, to represent only one-fifth of the total accident cost. The other four-fifths represents the hidden cost and is made up of such items as: (1) Damage to property, such as occurs in case of a mine explosion; (2) machine and equipment damage; (3) interrupted or complete loss of production; (4) employe welfare and benefit associations; (5) partially increased wages after the injured employe returns to work; (6) time and wages lost by the injured worker; (7) time lost by his fellow workers; (8) time lost by foremen and other supervisors; (9) cost of investigating the accident by company, State, and Federal authorities; (10) cost of replacing trained worker who is injured.

The mine operator pays all of the direct cost and a good portion of the indirect cost.

What is the direct cost per ton of coal mined? During the 10-year period from 1922 to 1931, inclusive, the average number of men killed annually in the coal industry in the United States was 2,164 and the average yearly production for the same period was 569,798,426 tons. The fatal accident statistics are the only accurate figures we have over this period as, unfortunately, there are no accurate statistics kept of all lost-time accidents. However, some States keep accurate records of all accidents over 2-day disability. The Pennsylvania Department of Labor and Industry have such records and they show that, for a five-year period preceding 1932, for every fatal accident there were 77.7 nonfatal accidents of over 2-day disability, and the average cost of compensation for all compensable accidents in Pennsylvania since 1916, covering 1,169,820 cases, was $168 per case. The average for the first 11 months of 1931, covering 79,023 compensable cases, was $165 each. This is the lowest average cost in any one year since the compensation law has been in effect.

It is fair to assume that the Pennsylvania ratio of 77.7 nonfatal compensable accidents for each fatal accident for a 5-year period will be approximately true for the entire country, and that the average cost of all compensable accidents of $168 is a fair average for all the mining States, as these figures have been established for 38 percent of the coal production during the 10-year period.

The cost in compensation of mine accidents would be the following:

Average number of fatalities per year for the 10-year period, 1922-1931.....	2,164
Average number of lost-time compensable accidents, 2,164×77.7	168,143
Total.....	170,307

If the average cost of each of these 170,307 accidents is $168, then the total average yearly cost for the past 10 years has been $28,611,676 in compensation alone.

The average coal production during this period was 569,598,426 tons, with a compensation cost of 5 cents per ton.

Figures developed by the writer covering a large percentage of the Pennsylvania bituminous production for a 7-month period in 1930 showed that for each fatal accident there were 60.6 noncompensable accidents under seven days, with an average cost of $21 for medical attention. These factors applied to the 2,164 fatals show another 0.5 cent for medical attention costs of noncompensable mining accidents in Pennsylvania; and it is fair to assume this is average for the United States. This makes a total of 5.5 cents per ton for the direct cost and, if the indirect costs are four times the direct cost, the total is 27.5 cents per ton. All of the direct cost and part of the indirect cost must be figured in the cost of producing a ton of coal.

How can this cost be reduced? The answer is, organized safety; and the first step in this is the establishment of a properly organized safety department backed by 100 percent cooperation and sincere interest on the part of the management, with the determined objective of the chief operating official that accidents must be reduced.

The reader will say that most companies have an organized safety department. That is true—but many of them have not the determined backing of the management, and a safety department without this is only another added expense to help increase cost of production.

The principal function of a safety organization is to develop all the facts relative to safety and present these facts to the management. The carrying out of the recommendations of the safety department is a functional duty of the operating head; and it is his responsibility to acquaint all the supervising force with the fact that accidents cost, in compensation alone, an average of 5.0 cents for every ton of coal mined, and that it is their responsibility to eliminate accidents and reduce this cost to 1.0 cent per ton—an amount that coal-mine accident costs should not exceed.

The supervising force can comply with the demands of the operating head to reduce accident costs by removing hazards, enforcing compliance with State and company rules, installing proper safety equipment, and, most important, by giving proper safety instructions to the workmen and acquainting them with the fact that the indirect cost of coal-mine accidents, which is four times the direct cost, or 22.0 cents per ton, is borne largely by the worker and his family.

It doesn't cost much to sell safety to the worker other than intelligent effort and the will to do. The best proof that it can be done is that it is being done.

A large mine near Pittsburgh, mining approximately three-quarters of a million tons per year, employed a safety engineer in 1930, who began perfecting a real safety organization backed by the sincere cooperation of the management; and the organization for the elimination of accidents began functioning late in 1930.

(*Continued on page* 21)

* President, The Mine Safety Appliances Co.

Machine Competition Against Low Hand Wages

by **G. B. Southward**

MECHANIZED LOADING is generally considered to be adaptable only in high wage fields and unable to compete with hand loading where low wages are paid. Since the savings in machine operation are made by reducing the labor cost it does follow that the lower the hand labor cost is, the smaller will be the saving in actual cents per ton that can be effected by machines. So a number of companies in the low wage fields are inclined to believe that any cost reduction made through the adoption of complete mechanization would be so small as to be not worth while.

In this attitude two points may be overlooked. The first is that even a small reduction in cost may be worth the effort required to make it. The second is that this saving can be effected in conjunction with an increase in the wages paid the men. The possibilities that these two advantages offer in bettering present conditions in coal mining should not be underestimated.

EVERY MINE has its own particular conditions which have to be given consideration in any attempt to make a comparison between the results that will be had with hand loading and mechanical loading. Therefore any general figures which are made can not be applied to a specific case without more or less modification. But a generalization will serve to illustrate what may be expected in changing from hand to mechanized loading and for that purpose there are two sets of operating figures submitted with this article.

Two mining plans have been prepared as a basis for discussion—Figure 1 is for hand loading and Figure 2 is for mechanical loading with mobile machines loading into mine cars. Each plan uses the same room and pillar system and in order to make a more direct comparison each plan has the same dimensions for room widths, lengths, etc. The rooms are taken at 25 ft. and the entries at 12½ ft. With a 6 ft. seam of coal, a 7 ft. cut will produce 40 tons of coal in a room and 20 tons in an entry. Each plan shows the working territory required for an output of approximately 1,000 tons per day, and the figures in Tables A and B show the number of men employed and the amount of equipment used to operate each system, calculated as described in the following paragraphs.

THE HAND LOADING plan in Figure 1 assumes that each miner will load an average of 12½ tons per shift in rooms, or 10 tons per shift in entries. In addition he will do the drilling, shooting, timbering, and track work at the face. The plan shows four fully developed panels each having 12 rooms with two entries, two half-developed panels with six rooms each and the advanced entry work at the top of the main headings. This makes a total of 80 working places—60 rooms and 20 entries, and in order to maintain a production of approximately 1,000 tons per day it must be assumed that there will be a loader in each working place during every shift. Few mines are able to accomplish this, so in actual practice there would be more working places needed than are shown on the plan or else the average daily production would be considerably less than 1,000 tons.

On the basis of 12½ tons per miner in the rooms and 10 tons in the entry a room cut would be cleaned up once every three days and an entry once every two days. This would mean a total of 30 machine cuts per shift—20 rooms and 10 entries. Under average mining conditions using the shortwall type cutter, three cutting machines would be required for this number of places considering the amount of tramming that would be necessary.

With mine cars of 3-ton capacity there would be 330 cars loaded each day. In most mines four gathering locomotives would be required for this. The main haulage locomotives depend, of course, upon the distance from the workings to the tipple and it is assumed that two would probably represent the average for this tonnage. If each mine car makes two round trips per day a total of 160 cars would be required for this production.

TABLE A shows that a total of 98 men are employed in the hand loading mine for the productive work of cutting, loading, gathering and main haulage. Compared with this the mechanically loading mine shows a total of 40 men for these same operations and producing a similar tonnage. The basis for the mechanically loading operation, as shown in Figure II, is as follows:

The mechanical loading plan in Figure II assumes that each working place will be cleaned up once every shift. A room cut produces 40 tons and an entry cut has 20 tons and the territory in the plan as shown consists of 16 rooms and 16 entries—a total of 32 working places. These would be divided between three loading machines—one in each of the right and left hand room panels and one in the advance entry development at the top of the main headings. The territory and the tonnage assumed for each loading machine in this plan might be higher than the accomplishment that could be maintained under average mining conditions but the actual production would approach the theoretical capacity of 1,000 tons per day closer than this would be approached as an every day perform-

Table A

Number of Men Employed to Produce 1,000 Tons per Day with Hand Loading and Mechanical Loading

	Figure I Hand Loading		Figure II Mech. Loading	
Loading	80 men		36 men	
Cutting	6 men			
Gathering	8 men			
Main haulage	4 men		4 men	
Total productive		98 men		40 men
Entry tracks	4 men		4 men	
Timber and slate	4 men		2 men	
Brattices	4 men		4 men	
Pumping	2 men		1 man	
Wiring and bonding	2 men		2 men	
Miscellaneous	2 men		2 men	
Total general inside		18 men		15 men
Tipple	10 men		15 men	
Shops	4 men		6 men	
Handling supplies	2 men		2 men	
Total outside		16 men		23 men
Total employed		132 men		78 men

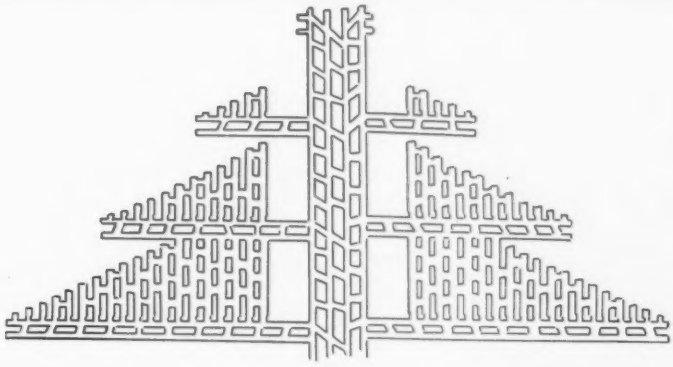

Fig. 1

Sketch of mining plan with hand loading showing territory theoretically required to produce approximately 1,000 tons per day, assuming each miner loads 12½ tons per shift in room work and 10 tons per shift in entries. This territory does not include extra working places which are customary in actual mining

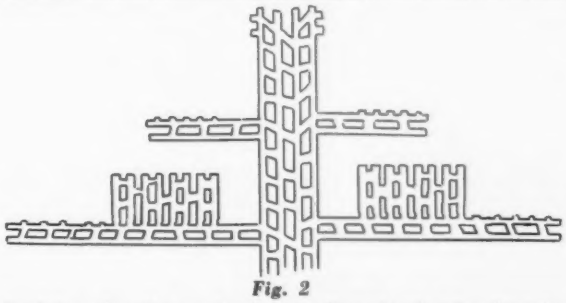

Fig. 2

Sketch of mining plan for mechanized loading showing territory to produce approximately 1,000 tons per day with mobile mechanical loaders. Three machine units are assumed to produce this tonnage—one in each of the first right and left room entries and one in advance work

ance in the hand loading mine in Figure 1. So any error in the figures used for the two plans in this article is more apt to be in the tonnages than in the comparisons between the number of men employed and the amount of equipment shown in Tables A and B.

Each loading machine unit would have a crew of 12 men, two for cutting, two for drilling, one for shooting, two loading machine operators, two on the gathering locomotive, two for timbering and track and one clean up man. The three crews would have 36 men and assuming that two main line locomotives would be required as in the hand loading mine, the total number of employes for the productive work would be 40 men as shown in Table A.

Each working unit would be complete with a cutting machine, power drill, mechanical loader and gathering locomotive. The mine cars would not be loaded as heavy as in hand work and their capacity is figured at 2¾ tons. On the other hand the cars are loaded in a shorter time with the machine and should make three round trips per day instead of two as in hand loading. This would require 120 cars for the total output.

THE SMALLER working territory in the mechanical loading mine would require less men for maintenance than the larger territory in Figure I. This is taken into account in Table A in the "General Inside" crew for the pumping, and for entry timbering and roof slate. The entry tracks, trolley wire, etc., show to have the same number of men in each mine. This is due to the fact that while the territory in the mechanical loading mine is smaller, the more rapid advance of its working places would have the same amount of track and wire extension per ton of coal as in the hand loading mine. However, the concentrated workings would require less maintenance and for this reason it is probable that these general items are not quite fair to the mechanical loading mine and that some additional credit should be given.

For the outside work the table shows a greater number of men employed in the mechanical loaded mine for the tipple and shops. It is usually found that mechanically loaded coal requires more cleaning on the outside than with hand loading and the additional machinery and the greater importance of keeping it in proper repair requires more men for its maintenance.

THE AMOUNT of equipment for each mine is shown in Table B. In the all-mechanical mine the investment for the loading machines is an additional cost over the investment for a hand-loading operation. However, the smaller number of working places and the higher productive rate resulting from a concentrated territory tends to reduce the amount of equipment needed for the other operations of mining so that the investment cost of the loading machines is partially offset by this factor. For example, in Figure II the cost of the three mechanical loaders would be approximately $30,000. However, as shown in Table B there is a saving of one gathering locomotive, 40 mine cars and a considerable amount of track material so that the actual investment required for the all-mechanical mine would be reduced from $30,000 to somewhere between 10 and 15 thousand dollars over the cost of equipping the hand-loading mine. An interest and depreciation charge of 25 percent would amount to about $3,000 per year, and $15 per day, based on 200 working days, would represent the charge for excess equipment in the mine in Figure II as compared to Figure I.

In a mechanical loading mine the explosives are furnished by the company; this is an extra cost that does not apply in hand loading. There would also be more electric power used, although in actual practice the more efficient operation of the machines in an all-mechanical mine does not increase the power cost in proportion to the amount of extra current used. The maintenance and repair parts for the loading machines is a third additional charge. The sum of these three items for explosives, power and loading machine maintenance might be as much as 7½ cents per ton and, at this rate the daily cost for production of 1,000 tons would be $75.

AS SHOWN in Table B there are 132 men in the hand-loading mine. If we assume an extremely low wage rate of $3.25 per day the average daily payroll would amount to $440. A mechanical-loading mine requires a higher average wage rate than hand loading and if we take this at $4.00 per day for the 78 men shown in Table B, Mine No. 2 would have a daily payroll of $312. Adding to this the charge of $15 for machine investment and $75 for supplies and extra power as described in the two preceding paragraphs, the cost per ton in the all-mechanical mine would still be less than that in the hand operation. As stated in the beginning of this article these figures are only generalizations but they serve to show that mechanical loading can compete with a low wage scale paid for hand loading.

Table B

Equipment Required to Produce 1,000 Tons per Day with Hand Loading and Mechanical Loading

	Figure I Hand Loading	Figure II Mech. Loading
Loading machines ...	..	3
Power drills	..	3
Cutting machines ...	3	3
Gathering locomotives	4	3
Main line locomotives	2	2
Mine cars (3 ton)...	160	120
Panel entry track, ft.	4,800	2,400
Room track, ft.....	12,000	4,800
Main line switches...	8	6
Room switches	60	16
Trolley wire, ft.....	6,000	3,500

NEWS
of the mining field

Personals—

C. F. KELLEY, president, The Anaconda Copper Company, sailed for Europe recently.

ARTHUR B. FOOTE, general manager of the North Star Mines, at Grass Valley, Calif., has transferred his office to New York City.

JAMES F. CALLBREATH, secretary, The American Mining Congress, who is making his annual visit of western mining districts, recently spent several days at Salt Lake City, where meetings of the various groups of mining men in that state were held.

H. FOSTER BAIN, Copper & Brass Research Association, has returned to New York after a special trip to the Pacific coast.

WILLIAM G. MATHER has been awarded the honorary degree of Doctor of Laws by Trinity College. Mr. Mather graduated from this college in 1877.

FRANK H. CROCKARD, director, American Mining Congress, has retired from the presidency of the Woodward Iron Company.

THE MONTANA SCHOOL OF MINES has received through the will of W. A. Clark, 3rd, his unusually splendid mineral collection.

J. P. HODGSON, manager of the Copper Queen Branch, Phelps Dodge Corporation, was recently married to Mrs. Clara W. Naylor, of La Cresenta, Calif.

GERALD SHERMAN, well known consulting engineer of New York and Arizona, is engaged in special work in the Pennsylvania anthracite district.

IRA CLEMENS, president of the Commercial Fuel Company, has been elected vice president of the Southwestern Interstate Coal Operators Association.

K. A. SPENCER, Pittsburg-Midway Coal Company, was elected vice president of the Southwestern Interstate Coal Operators Association, for Kansas, at the recent meeting of the association.

L. S. CATES, president, Phelps Dodge Corporation, was a recent Washington visitor.

The Twenty-first Annual Safety Congress, under the auspices of the National Safety Council, will be held at Wardman Park Hotel, Washington, District of Columbia, October 3-7, inclusive. A splendid program is being arranged, including some very interesting papers on mine safety, both for the coal and the metal industries.

The 1932-33 edition of Mac's Coal Directory and Buyers Guide, published annually by the Coal Information Bureau, Union Trust Building, Pittsburgh, Pa., is now off the press and ready for distribution.

Advance Summary—Recovery of Metals from Secondary Sources in 1931

The value of certain nonferrous metals recovered from secondary sources in 1931 is reported to the United States Bureau of Mines, as $110,674,600, which is $82,580,500, or 43 percent less than in 1930, and the total quantity decreased 21 percent. This decrease in value was partly due to the much lower yearly average prices of copper, lead, zinc, tin, and antimony. The main decrease in quantity of secondary metals treated in 1931 was in copper and brass, which declined 27 percent, while the value decreased nearly 50 percent.

The shipments of scrap copper to Europe were double those in 1930, while the shipments of scrap brass declined. The smelters that treat mainly primary material produced 62,206 tons less secondary copper in 1931 than in 1930.

There was a decrease of 9 percent in secondary lead reported by smelters that treat mainly ore and bullion, and the decrease in output of lead in alloys reported by smelters that treat scrap and drosses was 22 percent.

The zinc recovered by redistillation decreased about 13,200 tons, and the zinc recovered in scrap brass was much less in 1931 than in 1930. There was little change in the quantities of zinc dust, lithopone, zinc chloride, and zinc sulphate made from zinc dross and zinc residues.

The detinning plants treated about 27,600 long tons less clean tin plate clippings in 1931 than in 1930, and the yield per ton was the same. About 66 percent of the recoveries at detinning plants was as tin content in tin tetrachloride, tin oxide, and other chemical compounds, compared with 69 percent in 1930. Prices of tin were too low to treat profitably any old tin coated containers. The large decreases in the quantity of secondary tin was in that contained in alloys such as solder, babbitt, and bronze.

As the trend in the prices of primary metals was steadily downward and most metals had their lowest prices at the end of 1931, the prices for scrap metals, alloys, and residues declined so that dealers and secondary smelters had little opportunity to sell material at a profit, and the gathering of secondary metals at their source was greatly retarded. Many foundries were idle or operated on a much reduced scale, and their purchases of scrap metals and composition ingots were spasmodic and in small lots.

Corrigan-McKinney Newton Steel Deal Approved

Affiliation of the Corrigan-McKinney Steel Company, of Cleveland, with the Newton Steel Company, of Newton Falls, Ohio, became operative upon deposit of the required number of shares by stockholders, W. G. Mather and Donald G. Gillies, chairman and president, respectively, of the Cleveland company, announced.

Through a proposed affiliation which may pave the way for a later merger of properties and management, officers of the Corrigan-McKinney Steel Company and the Newton Steel Company set up a plan for an exchange of stock designed to further cement the present relationships between the two companies, according to a formal announcement issued on July 8.

The plan of affiliation was announced jointly by William G. Mather, chairman of the board, and Donald B. Gillies, president of the Corrigan-McKinney Steel Company, and by E. F. Clark, president of the Newton Steel Company. The plan involves no change in management or personnel, but looks toward a closer cooperation between the two companies on a producer and consumer basis.

Announcement has been made by the National Coal Association that the decision in the case of Appalachian Coals, Inc., will be handed down October 3.

The "YARD STICK"

of COST COMPARISONS

In comparisons of costs and performance the standard equipment in concentration is the Deister-Overstrom Diagonal Deck Table. With this table you are guaranteed the highest degree of metallurgical efficiency at lowest costs.

The DEISTER CONCENTRATOR COMPANY

Incorporated 1906

917 Glasgow Ave., Ft. Wayne, Ind.

SAFETY RULES for Installing and Using Electrical Equipment in Metal Mines were approved as American Recommended Practice by the American Standards Association as of August 23, 1932, and designed as M24-1932. This standard was developed and presented to the ASA through the procedure of the National Standardization Division of The American Mining Congress, under the chairmanship of Mr. F. L. Stone, General Electric Company, Schenectady, New York.

The Copper & Brass Research Association

Forecasts a 40 percent gain for 1932 in the amount of copper used by the new-born air conditioning industry. A consumption of 3,500,000 pounds of the red metal for the current year has just been estimated by the Copper and Brass Research Association. Should summer cooling and winter humidification of residential quarters reach the degree of public acceptance freely predicted to occur within the next 5 to 10 years by leading industrialists and conditioning experts, the association looks to an annual market conservatively estimated at from 35,000,000 to 45,000,000 pounds of copper.

W. Val DeCamp, general manager for the United Verde Copper Company, at Jerome, Ariz., has been appointed as Emergency Director of Unemployment Relief, for Arizona. The Arizona Emergency Council is an organization of prominent Arizona citizens who are helping solve the problems of the state.

Additional Licenses Granted for "Seal of Quality"

The American Zinc Institute announces that licenses have been issued to additional manufacturers of galvanized sheets for use of the Institute's "Seal of Quality" trade-mark.

The complete list of licensees is as follows:

American Sheet and Tin Plate Company (subsidiary of U. S. Steel Corporation), Pittsburgh, Pa.

Apollo Steel Company, Apollo, Pa.

Bethlehem Steel Company, Bethlehem, Pa.

Continental Steel Corporation, Kokomo, Ind.

Granite City Steel Company, Granite City, Ill.

Gulf States Steel Company, Birmingham, Ala.

The Newport Rolling Mill Company, Newport, Ky.

The Reeves Manufacturing Company, Dover, Ohio.

Tennessee Coal, Iron & Railroad Company (subsidiary of U. S. Steel Corporation), Birmingham, Ala.

Wheeling Corrugating Company, Wheeling, W. Va.

Wheeling Steel Corporation, Wheeling, W. Va.

The Youngstown Sheet and Tube Company, Youngstown, Ohio.

THE HOUSE OF REPRESENTATIVES plans to dispose of a million copies of various documents in its files, which are said to be not needed, including 13,700 copies of reports of the mineral resources of the country from 1919 to 1927 and 7,900 copies of the annual reports of the Geological Survey from 1921 to 1930.

U. S. Steel to Spend $5,000,000 on Improvements

Myron C. Taylor, chairman of the board of the United States Steel Corporation, following a meeting of the finance committee today, made the following statement:

"The finance committee of the United States Steel Corporation has authorized the expenditure of about $5,000,000 for replacements and improvements of equipment in several of its plants in pursuance of its policy of rehabilitation. The plants to be affected are located in Ohio, Illinois, Indiana, Alabama and Pennsylvania. The production and installation of this equipment will give employment to a considerable number throughout the winter."

The Interstate Commerce Commission reports that there is a truck movement of 400,000 tons of coal annually from mines in Pennsylvania to destinations within a radius of 50 miles of the mines. This coal, it says, can be delivered to consumers' bins in this area at from $1 to $2 per ton less than the retail prices of dealers using rail transportation. The movement of coal by motor truck from Illinois mines to St. Louis in 1930 is said to have amounted to 500,000 tons, and that trucks available for this service at St. Louis can handle 10,000 tons of coal a day from Illinois mines. It also states there is a substantial movement of ex-lake coal from lake ports to destinations within a radius of 150 miles by truck.

Two mining organizations have recently adopted group life insurance policies for the protection of their employes through the Prudential Insurance Company of America. They are the Moniteau Coal Company, of Higbee, Mo., with 75 employes, and the Frisco Mining Corporation, of Princeton, Ind., with 77 workers. Each policy provides that the workers be insured for $1,000 each.

Advance Summary—Mineral Production of the United States in 1931

To supply the mineral industries promptly with data on the production and value of mineral during the past year, the following information is furnished by the United States Bureau of Mines.

In 1931 the approximate total value of mineral products in the United States was $3,180,000,000 or a drop of 33 percent from the total value of mineral products in 1930.

Declines in values, accounted for both by lower units prices and by the falling off in output of nearly all mineral products, are principally explained by the world depression that affected virtually all lines of industrial activity. The total value of metallic products in 1931 decreased 42 percent, as compared with 1930. Notable decreases in total values, ranging from 44 to 54 percent, were recorded for copper, iron, silver, lead, and zinc, but the value of gold production increased 5 percent. The total value of non-metallic mineral products in 1931 decreased 31 percent from the preceding year; also, the mineral fuels declined 32 percent.

The following figures give the approximate total value of metallic mineral products and nonmetallic mineral products other than fuel and of mineral fuels produced in the United States in 1931:

Approximate Value of Mineral Products of the United States in 1931

Metallic	$567,200,000
Nonmetallic (other than fuels)	719,700,000
Mineral fuels	1,885,800,000
Unspecified	7,300,000
Total	$3,180,000,000

This statistical analysis of the quantity and value of mineral products for the year 1931 summarizes the principal results obtained from the annual canvass of the mineral industries. Pending completion of the more comprehensive commodity surveys, it presents in condensed form—as early as possible—the statistics of output and value. This report is subject only to minor revisions of statistics as may be required by receipt of additional data on the annual canvasses after the preparation of this study.

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We make Borings for Coal, Clays and all Minerals. Up-to-date Equipment. Gasolene, Steam and Electric Outfits. Ask us for estimates.
MOTT CORE DRILLING COMPANY
HUNTINGTON, W. VA.

With the MANUFACTURERS

Pittsburg & Midway Coal Mining Company, West Mineral, Kans., has just authorized the building of a combination wet and dry cleaning plant, the wet end being composed of Wuensch Cone equipment washing from 6 in. to ¾ in., and in the dry end the Stump Air-Flow Coal Cleaner will be used and will handle coal from ¾ in. to 0. The capacity of the washing plant is 300 tons per hour, and probable date of completion will be November 1.

Barnes Coal Company, Barnesboro, Pa., is building a dry cleaning plant, using the Stump Air-Flow Coal Cleaners for 3 in. to 0, sizing the coal into several sizes before treatment on the air cleaners. The capacity of the plant will be 360 tons per hour; the date of completion approximately December 1. Roberts & Schaefer Company are engineers and contractors for both plants.

The Pennsylvania Compensation Rating and Inspection Bureau is now allowing a total credit of 18 cents per $100 of pay roll to all mines under their jurisdiction which are equipped with protective hats or caps, safety goggles, and safety shoes.

Mine Safety Appliances Company, Pittsburgh, Pa., announce their new Bulletin No. 115, on M-S-A safety shoes and pacs.

The Keystone Driller Company, of Beaver Falls, Pa., announces the appointment of Mr. G. L. Harman as general sales manager. Mr. Harman was until recently sales manager of the Industrial Brownhoist Corporation, Cleveland.

Stephens-Adamson Mfg. Co., conveyor manufacturers of Aurora, Ill., have established a new branch office at Rochester, with headquarters in the Cutler Building. F. H. Wisewell has been appointed district manager.

Apex No. 1, a new rock explosive, is announced by the Atlas Powder Company as an economical substitute for the more expensive, high-strength explosives heretofore used in quarrying. This explosive is also well suited for blasting coal overburden.

A new leaflet, entitled "Heavy Duty Timestarters," has been published by the Westinghouse Electric and Manufacturing Company.

A synchronous motor starter, entirely enclosed in cubicles for protection against dust, was recently built and shipped from the East Pittsburgh works.

Volume 2 of a series of booklets describing work at the Hoover Dam as it progresses has been issued by Ingersoll-Rand Company. The building of Boulder City and the driving of the four 56-ft. tunnels which will divert the Colorado River through the walls of Black Canyon while the dam is being erected are featured in the current issue. These booklets appear under the general title, "The Story of the Hoover Dam," and are obtainable at the main office of the company, 11 Broadway, New York, or at any branch office. Volume 2 consists of 40 pages and 85 illustrations.

Harnischfeger Corporation, Milwaukee, Wis., have improved their line of P. & H. dragline buckets. Their new folder—D-2—describes these changes.

A leaflet describing the application and distinctive features of the Westinghouse Linestart Type CS squirrel-cage induction motors has been announced by the Westinghouse Electric and Manufacturing Company and is available from any district office or direct from the advertising department, East Pittsburgh, Pa.

A new, air-break type of d.-c. explosion-proof, across-the-line, manual control, approved and rated "permissible" by the U. S. Bureau of Mines, has been announced by Cutler-Hammer, Inc., 408 North Twelfth Street, Milwaukee, Wis.

Ingersoll-Rand Company, 11 Broadway, New York, has developed four sizes of double-drum "Utility" air hoists. The application of these hoists is in slushing and scraper loading in mines and quarries, sand and gravel pits, etc., wherever portable double-drum air hoists are required.

The Atlas Powder Company has announced appointment of Mr. E. Frost as director of sales, succeeding the late J. W. Mathews as director of sales. Mr. Frost will have full charge of all selling activities in the explosive department.

O-B Presents New Product

Light in weight, exceptionally strong, and of low cost, the new Universal Strain Clamp, made by the Ohio Brass Company, Mansfield, Ohio, is satisfactorily filling the quite general need for a small, inexpensive dead-end clamp. It is designed especially for use in stringing distribution lines, substation buses, low-current transmission lines, and overhead ground wires. Although of light weight, this new clamp will develop an ultimate of at least 10,000 pounds. Light weight and high strength at low cost are the result of improved design plus the inherent qualities of O-B Flecto Malleable Iron which is non-brittle and amply meets the requirements of high-tension line hardware.

Thirty-nine pieces of equipment designed to assist in the burning of anthracite for the greatest efficiency have been approved by the Anthracite Institute Laboratory according to Bulletin No. 10 just issued. Each piece of apparatus has undergone severe tests over periods of weeks and months. Devices considered have ranged from radiator switches and thermostats to hot-water heaters, automatic stokers for domestic use and for power plants developing upwards of 300 horsepower.

The United States had a favorable trade balance of $334,076,000 in 1931, according to figures of the Department of Commerce. Total exports for the year amounted to $2,424,183,000 and imports were $2,090,107,000. Exports for 1930 were $3,843,181,000 and imports $3,060,908,000.

Completion of the organization of "The Industrial Sales Company," a new Cincinnati concern, was effected recently. W. F. Robinson, former sales engineer for the Weir Kilby Corporation, will head the company, with P. L. Bauer, former sales engineer for the Edwards Manufacturing Company, as vice president, and Thomas L. Tallentire, of the law firm of Tallentire and Barber, as general counsel.

The business of the new firm will be the representation of manufacturers of supplies and equipment for industrial, contracting, and railroad lines in the Cincinnati territory.

We Look Into the Earth

By using Diamond Core Drills. We prospect Coal and Mineral Lands in any part of North or South America.

Pennsylvania Drilling Co.
Pittsburgh, Pa.
Drilling Contractors

(*Continued from page* 15)

During 1930 the compensation, medical and hospital costs for this mine were $61,570, or 8.0 cents for every ton mined. In 1931, with a slightly less tonnage, these same costs were $8,681, or 1.2 cents per ton—a reduction in accident costs of 6.8 cents per ton. The compensation costs only, in 1931, were $5,500, or .73 cent per ton. For the first quarter of 1932 their compensation costs were .14 cent per ton. At the same time the efficiency increased from 7.34 tons per man-day in 1930 to 9.04 tons per man-day in 1931. Not only was the total number of lost-time accidents greatly reduced but the severity as well. The average cost per lost-time accident was reduced from $259.79 to $140.01.

How did this company accomplish this record? The safety engineer says that it was brought about by closer supervision and more rigid enforcement of safety rules. The writer believes that it was accomplished largely through the will of the management to carry out the recommendations of the safety engineer.

Some specific features of their program were: The training of every man in first aid and working in accident prevention features with this training; the organization of a chapter of the Holmes Safety Association with all employes as members—monthly meetings are held which are both entertaining and safety educational; the foremen and assistants have their safety council, which holds monthly meetings; each foreman holds a weekly safety meeting of all his men, at lunch time, and talks to them on safe operating practices and explains any new safety rules as they are adopted; the use of a potential hazard report card by all foremen and assistants; special safeguards introduced — complete rock dusting of the mine; the adoption of "protective" caps, which has reduced head injuries; the use of protective shoes, with 85 percent of the men so equipped, which has greatly reduced foot and toe injuries; the use of protective goggles, 100 percent, which has greatly reduced eye injuries.

Another large mine in this same district with a well-organized safety department has had such a fine record for 10 years that their good safety record year after year ceases to be "news." During 1931 this mine, with a production of 667,600 tons, had only 14 accidents of over 2-day disability. Unfortunately one was a fatal, which is very unusual at this mine, yet their compensation cost was only 1.3 cents per ton.

Another company in this district, having maintained a fine safety organization over a period of years with the general manager the most interested and forceful safety medium, produced over a million tons in 1931 with a compensation cost of slightly less than .75 cent per ton.

Another company in this same district, with an organized safety department functioning, produced over 600,000 tons with a compensation cost of 1.9 cents per ton.

The other side of the picture is that of a mine in this same district, without organized safety and not doing the things these other companies are doing, which had a compensation cost of 7.85 cents per ton the past year; and still another mine, with physical conditions comparable but with no safety organization, which had a compensation cost of 5.4 cents per ton in 1931.

A large mining company, operating mines in several States and producing over 10,000,000 tons annually from 10 seams, and having one of the most effective safety organizations in the coal-mining industry, had a compensation, medical and hospital cost of 1.8 cents per ton last year as compared with 4.0 cents before their safety organization was put into effect.

A large coal company operating a group of mines in the Midland field of Illinois, with a safety organization headed effectively by the divisional superintendent, which had done practically everything enumerated by the first company described—such as 100 percent first aid training, an accident-prevention course for all officials, and installed proper safety appliances—reduced their compensation costs from 6.43 to 3.84 cents per ton in 1931, one of their largest mines having a cost of 2.99 cents per ton for that period.

A large mine in the Logan field in West Virginia, having a fine safety organization headed by the general superintendent with full support and cooperation of the operating vice president, has just completed 14 consecutive months without a lost-time accident and, therefore, no compensation cost.

A large mine in the State of Washington, having the worst possible physical conditions from a hazard standpoint, organized and planned an excellent safety campaign for 1931, backed by the operating executives, with the result that they reduced their lost-time accidents from the 95 that occurred in 1930 to 21 in 1931—a reduction of 78 percent through organized safety. The reasons given for this accomplishment are admirably stated in a letter from the executives of the company to the superintendent:

"We feel that your showing is, in a large measure, due to the adoption of every safety step which appeals as having merit. Here are some of the reasons for your success:

"1. Regular monthly safety meetings of the Holmes Safety Association. These meetings are outstanding in the State of Washington both from the point of interest and attendance.

"2. The entire personnel trained 100 percent in first aid.

"3. The adoption of the latest type Edison safety lamp.

"4. Equipping every man underground with latest type self-rescuer.

"5. Adoption of the 'hard-boiled' and 'protective' cap for underground employes.

"6. Rock dusting of gangways, counters, and airways.

"7. The zoning of the mine for competitive safety.

"8. Careful preliminary instructions to new men and constant warning to all.

"9. Improved methods of loading and shooting with same held to lowest minimum.

"10. Sufficient and proper timbering, careful gas supervision, guarding of trolleys, elimination of dangerous nails, clean and light traveling ways, good air, and instant attention to every dangerous condition or practice, *and 100 percent teamwork right down through the ranks.*"

Organized safety will reduce accidents in coal mines; and these accidents are now costing 5.0 cents per ton for compensation and .5 cent per ton for medical attention and hospitalization. The indirect costs are estimated to be four times this amount, or 22.0 cents per ton additional.

A safety organization properly functioning should reduce the compensation costs to 1.0 cent per ton, and another 1.0 cent per ton should cover the cost of the safety department and additional safety equipment necessary to accomplish this compensation cost.

National Carbon Company, Inc., Carbon Sales Division, Cleveland, Ohio, has recently announced a new electrographitic brush known as National Pyramid Grade No. 234, the unique characteristic of which is a non-resilient structure—a property which enables the brush to maintain exceptionally firm contact on commutators of high peripheral speed. It is announced that excellent commutation, low friction and high carrying capacity combine with the smooth riding properties of this new grade to minimize brush wear and commutator maintenance. The field of application of this new grade as stated in the announcement is for heavy duty direct current generating and substation equipment.

The Mining Safety Device Company, Bowerston, Ohio, manufacturers of Nolan Patent Mine Car Dumping and Control Devices, have been awarded the contract for two special steam car dumpers and car control units for a large anthracite breaker.

The dumps and car control units are interlocked by a novel control arrangement which is non-reversible and controls all operations by one revolution of the control lever. The equipment is designed for large tonnages and arranged to unload the mine cars with a minimum breakage of material.

Dr. E. Dana Durand, chief economist of the Tariff Commission, has sailed for Europe to study at first hand the effects on the currents of international trade of the depreciated currency in those countries which have gone off the gold standard. This study grows out of a Senate resolution. Before Congress adjourned the Commission reported on the effects of depreciated currency on our imports and exports, and also made a computation of the ad valorem equivalents of specific duties imposed by the tariff act of 1930, based on the experience of certain three months' periods. Other phases of the question remain for investigation. In their pursuit Dr. Durand's studies will form a part.

A standard for hand methods of screen testing of ores has been approved by the American Standards Association as American Recommended Practice. The standard was developed by the Milling Committee of the American Institute of Mining and Metallurgical Engineers under the chairmanship of G. H. Clevenger, consulting metallurgist, Boston.

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Why Every Mining Man Should be a Member *of the* American Mining Congress

THE American Mining Congress is an organization that represents the entire mining industry. Its sole purpose and effort is to help the mining industry and its members in every way possible. The proven value of this effort is abundantly evident in the long record of splendid results it has accomplished in the past and is accomplishing today.

ITS moderate annual Individual Membership fee is only $10. This fee not only contributes to the nation-wide work the A. M. C. is doing and from which the Individual Member positively though indirectly benefits, but it also entitles him to many immediate and direct privileges.

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IF you are not now a member of the American Mining Congress do not hesitate to join any longer. Add your strength and influence to that of the many thousands of your fellow mining men who are not satisfied with merely *wanting* to better conditions in your industry, but are interested enough to *do something about it!*

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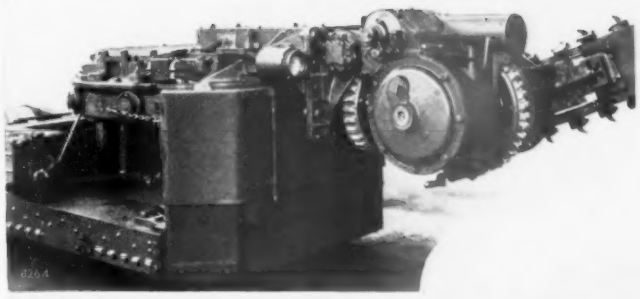

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The outstanding feature of the Jeffrey 29-LE Arcshear Machine is its ability to shear on a curve.

In fact—*it is the only combination machine that makes a shearing cut on a curve.* The small illustration above shows the 29-LE with cutter bar arranged for shearing cut.

The larger illustration shows the 29-LE with cutter bar arranged for top cutting. It can also be arranged for cutting directly on the bottom in narrow and wide places and for center cutting.

The cutter bar is supported on a revolving head, so that it can be rotated by power into any plane desired. This revolving head carries a feed mechanism with both slow and fast speed for feeding the cutter bar through the coal about its point of support when shearing.

The cutter head is mounted on three screws, adjustable by power while machine is operating. This three-point suspension permits tilting the cutter bar in any direction so as to easily follow the irregularities of bottom, top or dirt band.

The Jeffrey 29-LE is mounted on a self-propelled truck.

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M-S-A SAFETY PAC—A White Rubber, Insulating Pac with Vulcanized Safety Toe Box, Waterproof and Reinforced where wear is greatest. An Important feature is that the Lining is made a part of this Pac by having Rubber struck through the Fabric in process of manufacture. Light in Weight, Comfortable and available in Full Sizes from 6 to 12 inclusive in standard width. An ideal Pac for use in Wet Mines.

It costs no more to wear M-S-A Protective Footwear than ordinary Non-Safety Shoes

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